Factors in Undertaking [illegible] Consolidation
1973

ENVIRONMENTALLY SENSITIVE EQUIPMENT FACILITIES

IN THE

CIA HEADQUARTERS BUILDING

LANGLEY, VIRGINIA

Real Estate and Construction Division
Office of Logistics

5 March 1973

25X1

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LIST OF ABBREVIATIONS AND DEFINITIONS

ACME System	A 90-ton primary chilled-water system located on the ground floor supplying the Office of Communications.
ADP	Automatic Data Processing (mechanical vice the "electronic" of EDP).
AND/OEL	Analysis Division, Office of ELINT, DD/S&T.
BTU	British Thermal Unit--heat required to raise one pound of water one degree fahrenheit.
Buffered Power	An electrically driven generator, normally between primary electric power and connected equipment; the result is a constant output, free of the normal transients found on commercial lines.
Cable Sec	Cable Secretariat, Office of Communications, DD/S.
Cable Tray	A metal trough that holds insulated electric wiring, used in lieu of conduit.
Carrier System	A 400-ton primary or backup chilled-water system located in the south basement presently supplying OCS, CRS, ISD, and OEL.
Conduit	A pipe through which wires are pulled, integral to an electric system providing wire protection and grounding.
Critical Power	A 2500 KW, 90-second automatic start, backup generator located in the Powerhouse Switchyard, serving components requiring quick-response power, e.g., OCS, CRS computer center, and Sigcen.
CRS	Central Reference Service, DDI.

Datacom	Data Communications Center, Office of Communications, DD/S.
EDP	Electronic Data Processing.
Emergency Power	Two (2) 2000 KW 20-to-30 minute manual start backup generators, located in the powerhouse.
ESE	Environmentally Sensitive Equipment which includes computers, communications gear, and closely associated technical processing equipment.
FID	Foreign Intelligence Division, DDO.
Fixed Temperature Fire Detector	A thermostatic device that signals an alarm when localized heat conditions rise to a preset temperature.
FMSAC	Foreign Missile and Space Analysis Center, DD/S&T.
Frantic Power	A 250 KW, ten-second response automatic start, backup generator located in the Headquarters basement, serving the most essential systems, e.g., the Watch Office and the Signal Center.
Halogen Extinguisher	Automatic fire extinguisher system which interrupts the combustion process through the use of Halogen, and an inert gaseous mixture of Fluorine, Chlorine, Bromine, and Iodine.
HEB	Headquarters Engineering Branch, Real Estate and Construction Division, Office of Logistics, DD/S.
House System	GSA-operated chillers located in the powerhouse with the air-handler equipment located in one of the five mechanical rooms in the Headquarters Building.
IPB	Information Processing Board.
ISD	Information Services Division, DDO.
MG Set	An electrically powered generator used at Headquarters between primary power and connected equipment. Serves to change frequency or absorb fluctuations in voltage.

Minicard	Original ADP system planned to be utilized by CRS.
OCS	Office of Computer Services, DD/S&T.
Package Unit	A self-contained water or air-cooled condensing unit, independent of the house air-conditioning system, used to cool various special-use areas.
Rate of Rise Fire Detector	A heat detecting device that signals an increase in temperature at a rate greater than a preset value.
RID	Formerly Records Integration Division, DDO, now ISD.
Sigcen	Signal Center, Office of Communications, DD/S.
Smoke Detector	A nuclear device that measures the amount of smoke and signals an alarm when conditions are critical.
Sprinkler System	An automated wet or dry pipe system which controls fires by a spray of water, may be interconnected with various types of fire detectors.
Ton	Air-conditioning term equating to 12,000 BTU's per hour--historically derived from the approximate amount of heat required to melt one ton of ice.
Trane System	A 136-ton multiple chiller and air-handler system located adjacent to the DCI garage, serving as primary and backup for part of the OCS computer center.
Transient	A rapid variation in electrical voltage also called "spike," "gliche," or "surge."
Underfloor Water Detector	Electronic device which initiates an alarm when it realizes a change in electric resistance of its sensing wires due to moisture.
UPS	Uninterrupted Power Source. A power system which activates automatically and instantaneously upon sensing an outage. Can be a battery system or mechanical "spinning reserve."
Walnut	Cryptonym for original RID computer area.

SYNOPSIS

This report is provided to analyze, summarize, and recommend solutions to facilities engineering problems related to environmentally sensitive equipment (ESE) in the Headquarters Building.

The Introduction includes a brief history of the expansion of ESE areas and the development of Headquarters facilities and utilities systems that support ESE. The Current Status section includes a definition of the scope of ESE areas, a physical description of supporting facilities and utilities, and related environmental, reliability, safety, and engineering problems. Conclusions are drawn that the majority of ESE is now marginally supported in terms of reliability and safety and that trends indicate that existing ESE areas cannot provide an adequate environment for future equipment.

The Recommendations section of the report has a statement of facilities provisions considered necessary to ensure the reliability and safety factors of facilities for ESE and to maximize flexibility, expansibility, and facilities engineering support efficiency. The Recommendations section also includes a proposal to renovate an area of the Headquarters Building to provide adequate ESE facilities while maintaining ongoing ESE operations.

A Discussion section considers alternate courses of action, develops rationale for the recommendations made, identifies a cost estimate of $3,700,000, and establishes a time frame of two years to effect recommendations. The Implementation section lists steps and decisions required to implement report recommendations.

I

INTRODUCTION

At the time of conceptual design of the Headquarters Building in the mid-1950's, the Agency made little significant use of electronic data processing (EDP) equipment, and the scope and character of today's use was certainly not envisioned. The building was designed for a number of special-use areas, most notably the RID (ISD) "Walnut" computer area, the Signal Center, CRS minicard area, and the library stacks; yet other than the Walnut and minicard areas, none of the areas had systems designed for particularly sensitive environment control. Also impacting on facility design criteria of the period was the fact that EDP equipment available on the market at that time was relatively stable and tolerant of wide variations of power, temperature, and humidity. A number of interrelated (and continuing) trends lead to the current ESE facility requirements of today:

- EDP equipment capabilities have increased substantially per pound of hardware and per unit of power.

- The demand for EDP products and utilization of related ESE have increased far more radically than equipment capabilities per unit of space (resulting in increased space demands).

- With increased EDP sophistication and the satellite program generated demand for microcircuitry, facilities engineers have been forced to devise "clean-room" systems to control power, temperature, humidity, and air systems to smaller tolerances. EDP equipment designers both encouraged and relied upon these environmental improvements not only to permit design of yet more sophisticated systems but also to reduce design, manufacture, and operating costs.

- With the greatly increased and concentrated costs of ESE plus increased hazards to personnel from fire and electrical shock, safety engineers sharply increased the scope, capability, and complexity of protection and detection systems.

- Concurrently with the preceding equipment trends, the Agency converted many manual or ADP systems to EDP (such as cable dissemination, transmission, relay, and receipt; CRS data banks; payrolling; etc.). The Agency also entered into sophisticated collection, analysis, and R&D programs related to sigint and imagery targets which created the most significant requirement for EDP and other environmentally sensitive equipment.

-- . The simultaneous and indirectly related trend toward greater use of electrical office equipment (typewriters, Xerox-type copiers, calculators, etc.) plus greater concern for employee comfort expanded demands on existing power and air-conditioning systems.

The original Headquarters utilities systems were designed with surplus capacity to permit some expansion without additional construction. The proportion of surplus capacity varied between systems with the greatest excess capacity in fixed, large components such as the water tower, primary power transformers, and the sewage system. The nucleus of the Headquarters utilities systems was, and remains, the powerhouse with steam and chilled water generated therein. Additionally, the Vepco commercial power transformers and switchgear are located in the powerhouse area with feeder lines leading to five primary power distribution vaults within the Headquarters Building. The power system included two 2000 KW emergency generators which, after a 15-to-30 minute starttime, can be switched to any distribution system within the Headquarters Complex (this system is now defined as "Emergency" power) plus a 30 KW, UPS generator to provide uninterrupted power to the Watch Office and limited critical circuits in the Signal Center. All air conditioning was provided by the "house system," i.e., chilled water generated in the powerhouse and distributed to large air handlers in the basement and penthouse fan rooms. Original building construction provided for raised floor construction and humidity control only in the small "Walnut" area for the RID original computer system; and no other specific provision was made for humidity, dust control, or ESE safety devices.

As ESE use expanded, areas (primarily on the ground and first floors) were converted to house this equipment. The house power system, with some modification, met most of the expanded requirements for primary power; however, the house air-conditioning system was not so flexible and many special package units were installed to provide primary, supplemental, and/or backup air conditioning. (Virtually all of the power utilized by ESE is converted directly to heat; therefore, air-conditioning requirements represent an almost direct energy conversion of connected power load.) The Trane system was installed to air condition the original OCS computer area (and is now too small to handle the total load), the ACME system was installed when the Sigcen screen room was provided, and numerous smaller package systems were provided for areas such as the sixth floor Datacom and the AND/OEL equipment area. With major expansion of the RID (ISD) and OCS computer rooms, the Carrier package system was installed, and the 2500 KW "Critical" power project initiated to provide rapid

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response backup power for essential ESE areas. The recent construction of the new CRS computer center imposed further increased loads on these power and air-conditioning systems. As all of the areas expanded, floor-to-ceiling height restricted the allowable height of elevated floors thereby making below-floor cable tray, conduit, and chilled water distribution piping installation impracticable and imposed severe restrictions on the scope of safety systems that could be installed.

The last major event affecting ESE was the power outage of 1970 which provided the impetus for rapid completion of the "Critical" system; replacement of the 30 KW instantaneous generator (which had been reduced to manual operation because of maintenance problems) with a 250 KW, quick response, automatic generator entitled the "Frantic" system; initiation of an extensive utilities reliability study by a consultant firm; and establishment of a Headquarters Engineering Branch (HEB) with a charter to ensure utilities systems reliability. Subsequently, based on HEB recommendations and ESE requirements, a motor generator (MG) set has been installed to provide buffered power to OCS, the electrical vault serving most ESE equipment is being expanded, the Carrier system capacity is being doubled, and MG sets are being programmed in FY 1974 for ISD, CRS, and the Sigcen. During the course of all the expansion, Safety Staff recommendations were made for improved detection/protection systems and many were implemented. Other safety provisions have been delayed pending fund availability and some, e.g., installation of a sprinkler system in the OCS tape vault, delayed because of technical installation problems caused by the building's physical constraints.

As will be shown in the following sections, the physical facilities and utilities systems supporting the ESE areas of Headquarters are marginal at best. The CRS computer area, because it is the most recently constructed, and the Sigcen area, because its equipment is the least environmentally sensitive, are least affected by facilities shortcomings; nevertheless, both areas still require substantial improvement. The question will, and should, be asked how Agency facilities engineers have permitted this situation to develop. A number of mitigating factors should be considered:

- From the date of occupancy, the Headquarters Building has been crowded and had no available space for expansion. All ESE areas, therefore, expanded at the expense of other functions or components; a naturally limiting factor inasmuch as significant upgrades of facilities around ongoing ESE operating is prohibitively difficult and expensive.

- Planning and programming data for new generation ESE was not automatically available to facilities engineers; therefore, facilities changes were most often made with minimum planning and construction time to meet equipment operational dates.

- Space allocation policy has generally followed a concept of a federation of directorates controlling given blocks of space. Coupled with the "need-to-know" policy, this concept significantly hampered provision of central supporting facilities and utilities for overall ESE and encouraged treating each area or component as an entity.

- Inasmuch as Headquarters is a relatively new and "monumental-type" structure, low priorities have, understandably, been placed on major expenditures for facilities improvements (awareness was, however, temporarily increased by the major power failure of 1970).

Most of the problems of the previous paragraph still exist in some form today and will represent major decision factors before implementation of the recommendations contained in this study can be effected.

II

CURRENT STATUS

As defined in this study, ESE areas encompass eight components in all four directorates and consist of the following: the OC Sigcen (and portions of the Cable Secretariat), the OCS computer center, the CRS computer center, the ISD computer center, the sixth floor OC Datacom, the equipment area of AND/OEL, the equipment area of FMSAC, and the Telephone Frame Room. Figures 1 and 2 show the locations of each area, and Table 1 lists each in tabular format showing square footage and pertinent data on physical facilities, utilities systems, and fire/safety systems. Definition of ESE areas is loosely based on the criteria that the equipment housed therein cannot function correctly within the fluctuations of power, temperature, humidity, and dust/air pollution considered acceptable for standard office equipment or personnel. Obviously, the criteria also includes a determination of criticality of function or value of equipment which justifies special consideration. As shown in the summation table, ESE areas total some 60,000 square feet of Headquarters space (approximately six percent of the net Headquarters area) and create a power and air-conditioning demand approximating 1330 KW and 480 tons respectively. These statistics are misleading in that, although ESE areas comprise a small proportion of Headquarters space and utilities, maintenance of ongoing operation and provision for future requirements commands the preponderance of facilities engineering time available for the building.

Analysis of existing physical facility conditions in ESE areas is covered in the following paragraphs by a descriptive narrative of problems or systems common to all areas plus comments peculiar to specific areas. To properly assess these conditions, it must be appreciated that all of the Agency's ESE is completely dependent on a stable power source and continuous air conditioning. Power transients or interruption, inadequate equipment cooling, or excessive humidity or dryness cause effects varying from equipment damage and shortened equipment life to lost programs or induced errors.

None of the ESE areas have underfloor signal cable tray or conduit for power cables which necessitates laying cables on the floor or in the case where no elevated floor is provided, suspending cables from the ceiling. Mixed cables on the floor introduces potential shock hazards (power cable to signal cable), equipment damage from the same cause, substantially raises the probabilities of water damage, and complicates relocation of equipment, maintenance, inspection, cleaning, and damage assessment. Use of overhead cables has long been an unacceptable practice in computer areas because of dust accumulation, aesthetics, and, as with loose cabling underfloor, comingling of power and signal cable. (See Figure 6 showing overhead cables in the AND area.) Figures 4, 5, and 6 show underfloor conditions in the OCS computer center, the worst of the ESE areas in this respect. In addition to power and signal cable, this underfloor area includes high pressure chilled water in rubber hoses plus underfloor water detection wires and a smoke detection system. Cabling is so congested that underfloor air distribution is affected. Should a high pressure hose burst or blow off from its connection, major malfunctions would certainly occur, shock hazard would be substantial, and damage assessment and restoration of operation would involve a major undertaking.

None of the ESE areas has a positive dust-control system with ensured dust reduction capabilities. The filter systems provided in air conditioning air handlers are general purpose and substantially below standards normally required in ESE areas. Inadequate dust control can materially shorten equipment life and increase maintenance cost and equipment downtime.

No central monitor and control system exists for utilities serving ESE areas. Significant variations occur in house chilled water temperatures, affecting both temperature and humidity, yet cannot be monitored or corrected rapidly under existing conditions and procedures. Air handlers and chillers have, on occasion, been deactivated for maintenance by GSA personnel without the knowledge of either ESE operating components or Agency facilities engineers. Power monitoring devices are inconveniently located and do not (for the most part) monitor with sufficient accuracy.

No balanced, highly controllable system for control of humidity and introduction of fresh air exists in any ESE area. Most of the major areas are air conditioned from multiple sources making rigid humidity control impossible. Equipment shutdown and damage possibly due to extreme humidity conditions have been reported.

No ESE area has an Uninterrupted Power Source (UPS), and only OCS has power regulation ("buffered" power). Effective UPS systems are still in the developmental stage but are designed to backup primary power with no interruption upon loss of prime power. Buffered power is provided by placing an electrically powered generator (MG set) between the ESE and the power source and results in elimination of transients. MG sets are programmed for CRS, ISD, and the Sigcen but not for other ESE areas.

Floor space is extremely congested in OCS, AND, and ISD with resultant problems in safety (fire exits), maintenance, air-conditioning distribution, and personnel comfort and efficiency. Introduction of new equipment is difficult, and facilities maintenance or improvement of any scope almost invariably results in partial shutdown of equipment. The space problem is particularly critical in AND where lack of space necessitated inclusion of a package air-conditioning unit in the work area. Resulting noise from the air-conditioning compressor exceeds recommended limits.

The scope of fire detection and protection systems varies between areas (as shown in Table 1) from none in the first floor area of AND to sprinklers, smoke detectors, and rate of rise detection systems in CRS. There are a number of outstanding or active work orders concerning safety items in ESE or related areas, some of which are impracticable because of building constraints. OCS, for example, requires an above-ceiling smoke detection system (a project which will necessitate equipment shutdown because of dust from removed ceiling tiles), and patching of holes in existing fire walls plus small items such as hanging fire extinguishers.

Other ESE facility problems include the low aesthetic appeal of work areas, flaking ceiling tiles in OCS (generating dust and scheduled to be replaced), wide geographical separation of both ESE areas and supporting systems compounding facilities maintenance difficulties, and lighting systems with nonvariable intensities.

The Telephone Frame Room qualifies as an ESE area because of requirements for backup power and air conditioning. Both are available or being provided, and the nature of the telephone equipment is such that elevated floors are not required. No major renovations are contemplated for this area.

The FMSAC ESE area is small, approximately 1,500 square feet, and although major facilities improvements are considered desirable, they can be provided comparatively easily without major disruption to operations.

Correction of the foregoing deficiencies in most existing areas presents major difficulties and is, in some instances, either so prohibitively expensive or technically difficult as to be infeasible. Major renovation of any ESE area while attempting to maintain all or partial ongoing operations is extremely difficult. Construction activities necessitate power and air-conditioning interruptions, access of workmen to restricted areas, creation of dust and dirt, relocation of equipment, etc. Raising elevated floor height to install conduit and cable tray is not possible on the ground floor because of slab-to-ceiling height restrictions (see Figure 7). Installation of a central monitor and control panel, while possible, loses much of its attractiveness and efficiency if the systems being monitored are widely separated and consist of multiple independent units.

Effective humidification control of the major computer centers is technically impracticable with the current multiple source, multiple unit air-conditioning systems which were not designed for this purpose. Dust-control systems are also dependent upon the characteristics of the air-conditioning systems, and it is not considered practicable to attempt to modify the existing air-conditioning systems to significantly improve dust control.

On the positive side, existing or programmed central power and air-conditioning systems have adequate capacity to handle both primary and backup requirements for all ESE areas (although AND and Datacom are not now programmed for connection to the Carrier system).

III

CONCLUSIONS

Physical facilities supporting ESE are marginal in terms of both maintenance of continuous operation and safety of equipment and operating personnel.

Assuming continued sophistication of equipment and increasingly stringent environmental requirements plus continued or increased demand for ESE, environmental conditions in existing ESE areas are inadequate to support future requirements.

Because of physical constraints, built-in restrictions in existing facilities equipment, and the necessity to maintain ongoing operations, it is not technically practicable to modify existing ESE areas to fully satisfy current or future ESE environmental requirements.

IV

RECOMMENDATIONS

1. Facilities supporting ESE should, as a minimum, be provided with the following:

a. Elevated floor systems of sufficient height (3'-0" minimum) to permit underfloor installation of:

(1) Signal cable tray grid,

(2) Power conduit grid,

(3) Grounding grid,

(4) Appropriate safety systems (see below),

(5) Air-conditioning plenum, and

(6) Chilled-water grid.

b. Primary and automatic backup buffered power systems which are expansible to include UPS systems;

c. Primary and automatic backup air-conditioning systems to include stringent humidity and dust control;

d. A central facilities monitor and control system;

e. Architectural features maximizing personnel efficiency and comfort (e.g., adequate ceiling height, variable lighting, acoustic treatment, and equipment layout);

f. Safety features to include floor and ceiling smoke and heat detection systems, automatic fire extinguishing systems, water detection or fail-proof drainage systems, fire walls and exits as required, central monitor and alarm panels;

g. Physical security provisions for signal emanation and physical intrusion control;

h. Sufficient preconstructed floor space to permit orderly expansion and introduction of new ESE systems while maintaining ongoing operations.

2. A 45,000 square foot area of the south end of the first floor of the Headquarters Building should be renovated to house ESE systems for OCS, CRS, ISD, AND, and FMSAC. Simultaneously, renovations as required, should be effected in the Sigcen/Cable Sec area of the first floor to include space for incorporation of Datacom. A possible area for renovation is shown on Figure 8. Estimated cost for this proposal is $3,700,000 as detailed in Table 2 and explained in section V, Discussion.

V

DISCUSSION

1. Alternatives:

a. Status Quo: There is considered to be no alternative to provision of modern facilities to house ESE except, possibly, in the degree of improvement required. Existing facilities introduce significant risks of major and minor interruptions of operation, increase maintenance cost, and present safety risks both for equipment and personnel. Further, if equipment design and usage trends continue, existing areas will not meet minimum criteria for future generation equipment.

b. Upgrade Existing Areas: Floor-to-ceiling slab clearances in OCS, CRS, ISD, and AND preclude installation of elevated floor of sufficient height to include installation of all of the recommended below-floor systems as listed previously. Further expansion of floor space is constrained by adjacent functions (and considered of minimal value on the ground floor). Many existing package air-conditioning systems have insufficient capacity and capability to meet humidity and dust control criteria. Major improvement in existing areas will impact significantly on ongoing operations in all areas now full of equipment. Accordingly, upgrade of OCS, CRS, ISD, and AND facilities is not considered practicable. Renovation of Sigcen facilities is considered practicable because ceiling height is sufficient, space is less congested, and it is understood that major equipment relocation is planned for cable dissemination equipment and relocation of Datacom to the Sigcen area. The Telephone Frame Room, because of the nature of the equipment therein, does not require renovation of sufficient scope to necessitate relocation, and the FMSAC ESE area is sufficiently small to permit special provisions for temporary relocation if required.

c. New Construction: Construction of a new building on the Langley compound is a feasible alternative but introduces major considerations.

- New construction requires approval of several regulatory entities including the National Capital Planning Commission (NCPC), the Environmental Protection Agency (EPA), and State and County governmental elements; thereby introducing major, uncontrollable delays.

. Assuming all Headquarters ESE areas were included, requirements are much less than 100,000 square feet, and great pressures would arise to "do it right" and build a sufficient size to include many functions now housed elsewhere (e.g., NPIC or DD/S&T components [redacted] with massive increases in cost, 25X1 time, and approvals required.

. Persuasive arguments can be made that all ESE areas belong within the Headquarters Building where the majority of "customers" are.

. Political considerations would appear to rule out major new construction at Langley at this time.

2. Recommendation Rationale: The following considerations applied in arriving at the recommendation to renovate and to locate in the south end of the first floor:

. The first floor is the only floor of Headquarters with sufficient floor-to-ceiling slab height to permit installation of an elevated floor of adequate depth to house necessary systems;

. Major systems now providing primary or backup utilities to ESE areas (e.g., the Carrier system, B Vault transformers and switchgear, the OCS MG set, Trane and ACME systems) are now located in the south end of the building;

. The cost of providing utilities to support ESE areas at the north end of the building is $1,100,000 greater because of the necessity to expand north power vaults plus increased air-conditioning runs from the Carrier system;

. ESE areas located on the south end of the first floor would be contiguous to the Sigcen and Telephone Frame Room providing centralization of critical areas for monitoring, control, utilities services, and maintenance;

. Utilization of the north first floor would necessitate relocation of dependent functions now contiguous to the library stacks;

. Operations in existing OCS, CRS, ISD, and AND areas can be maintained, with backup utilities, during renovation;

. Necessity for regulatory agency approval is obviated;

. Maximum utilization is made of existing utilities systems now supporting ESE areas (e.g., Carrier, the OCS MG set, and Trane);

. Renovation offers an opportunity to introduce next generation ESE without affecting ongoing operations;

. Net usable space in Headquarters would be increased by utilization of parts of "A" and "D" corridors as part of the new ESE area;

. Centralization of ESE areas, even though divided into organizational components by fire walls, would be expected to reduce space requirements by permitting centralization of paper and spare parts storage and contractor equipment maintenance functions (plus potential savings in equipment and personnel made possible by centralization of the ESE function);

. The new ESE area would have a built-in expansion capability of 20 percent; however, this area would be utilized initially for "soft" office, storage, and other related functions in order to permit maximum utilization of Headquarters space. These functions would be relocated outward as equipment demands required;

. Part of the area selected includes existing classroom and Office of Medical Services space. These areas were considered vulnerable because of the variable nature of utilization, security compatibility with external location, and consideration that the majority of "customers" for this space used it on an infrequent basis;

. Further expansion capability exists contiguous to the selected area (with, of course, the provision that existing occupants must be relocated).

3. Cost Estimates:

Table 2 presents a gross summary of cost estimates prepared. Estimates prepared, although based on more detail than shown in Table 2, are budgetary in nature and intended to identify a resource allocation parameter for consideration of recommendations herein. The estimate includes relocation expenses and costs to renovate, after relocation, the areas now occupied by ESE on the ground floor.

Part 2 includes a budgetary estimate to provide rental space for two years if it is determined that personnel now occupying the area designated for ESE use cannot be housed elsewhere within Agency-controlled space. Also, obviously, functions now occupying ESE targeted space could be relocated elsewhere within the Headquarters Building and other components moved to space outside the Headquarters Building. A possibility exists that rental costs could be reduced if sufficient vacant space is available in Agency-controlled buildings elsewhere in the Metropolitan Washington Area to permit temporary housing of some relocated components.

It is estimated that a minimum of two years from the date of approval will be required to relocate ESE as proposed. This time frame allows approximately six months for design and eighteen months for construction. The two-year time estimate presumes that the highest priority will be given and that necessary approvals, funding, and authorizations to levy priorities on GSA will be given.

VI

IMPLEMENTATION

The following actions are considered necessary to effect the recommendations. It should be noted that many of the actions can be implemented concurrently.

- Conceptual approval,
- Identification of space to be used,
- Identification of space for relocated components,
- Selection of design consultant,
- Determination of total requirements for new ESE area, (Coordinated with IPB, ESE components, and Physical Security and Safety elements of the Office of Security),
- Revalidate time and cost estimates,
- Design fund transfer,
- Completion of design,
- Evacuation of proposed space,
- Transfer of construction funds,
- Advertisement, bid, and award of construction contract,
- Renovation of new ESE area,
- Relocation of ESE components,
- Renovation of old ESE areas, and
- Return of relocated components.

TABLE I.

FACILITIES SUMMARY

Environmentally Sensitive Equipment Areas, Headquarters Building

Component	Location	Sq. Ft. Area (1) (2)	KW Load	Back-up Power Source	HVAC Load	HVAC Source (3) Prime	HVAC Source (3) Back-up	Elevated Floor Hgt.	Protection Systems (3)
AND/OEL	GE 78	3,422	37 KW	Emergency	25 ton	P	None	None	SD, RR
AND/OEL FMSAC	1D0023 1D0030	4,540	30 KW	Critical	12 ton	C & H/A H/A	H None	None 11" Partial	None
CRS	GD 76	7185	120 KW	Critical	40 ton	C	H	11"	SS, SD, UF, RR
FID ISD	GC 47 GC 61	9,089	200 KW	Critical	78 ton	H/A C	None H	11" 22" & 11"	SS, SD, RR
OCS	GC 03	14,135	430 KW	Emergency buffered	135 ton	C	H	11"	SS, SD, UF, RR
SIG CEN MAX	1B 27	12,254	201 KW 144 KW	Critical	100 ton 46 ton	A & H/A A	H H	11"	None
DATA COM/OC	6B12 6B14	3,650	55 KW 10 KW	Critical Frantic	16 ton 5 ton	H & H/A H & H/A	W W	11" None	SD None
TELEPHONE FRAME RM	1C48	7914	100 KW	Frantic	25 ton	H & H/A	None	Special Condition	None
TOTALS		65,083 ⌗ (1)	1327 KW		482 tons cooling				

(1) ⌗ includes 6232 ⌗ associated office space

(2) Excluding Sigcen, Datacom & Tel Fr. Rm.; Total = 38,965 ⌗ (35,033 equipment + 3932 assoc office)

(3) Abbreviations:

A = Acme
C = Carrier
H = House
H/A = House Air
P = Package units
W = Worthington

RR = Rate of Rise fire detector.
SD = Smoke detector
SS = Sprinkler system
UF = Underfloor water detector

TABLE 2

COST ESTIMATE, RENOVATION OF SOUTH FIRST FLOOR

Part 1

Architectural/Structural	$ 780,000
Mechanical	$ 675,000
Electrical, Telephone, and Data Grid	$ 790,000
Subtotal:	$2,245,000
Contractor Overhead and Profit	$ 560,000
Subcontractor and Security Costs	$ 220,000
Contingencies	$ 220,000
Base Cost to Contract:	$3,245,000
Design Costs (including GSA fees)	$ 300,000
GSA Supervision and Management	$ 250,000
TOTAL:	$3,695,000
SAY:	$3,700,000

RENTAL RELOCATION COSTS (IF REQUIRED)

Part 2

Rental	$ 600,000
Renovation	$ 400,000
TOTAL:	$1,000,000

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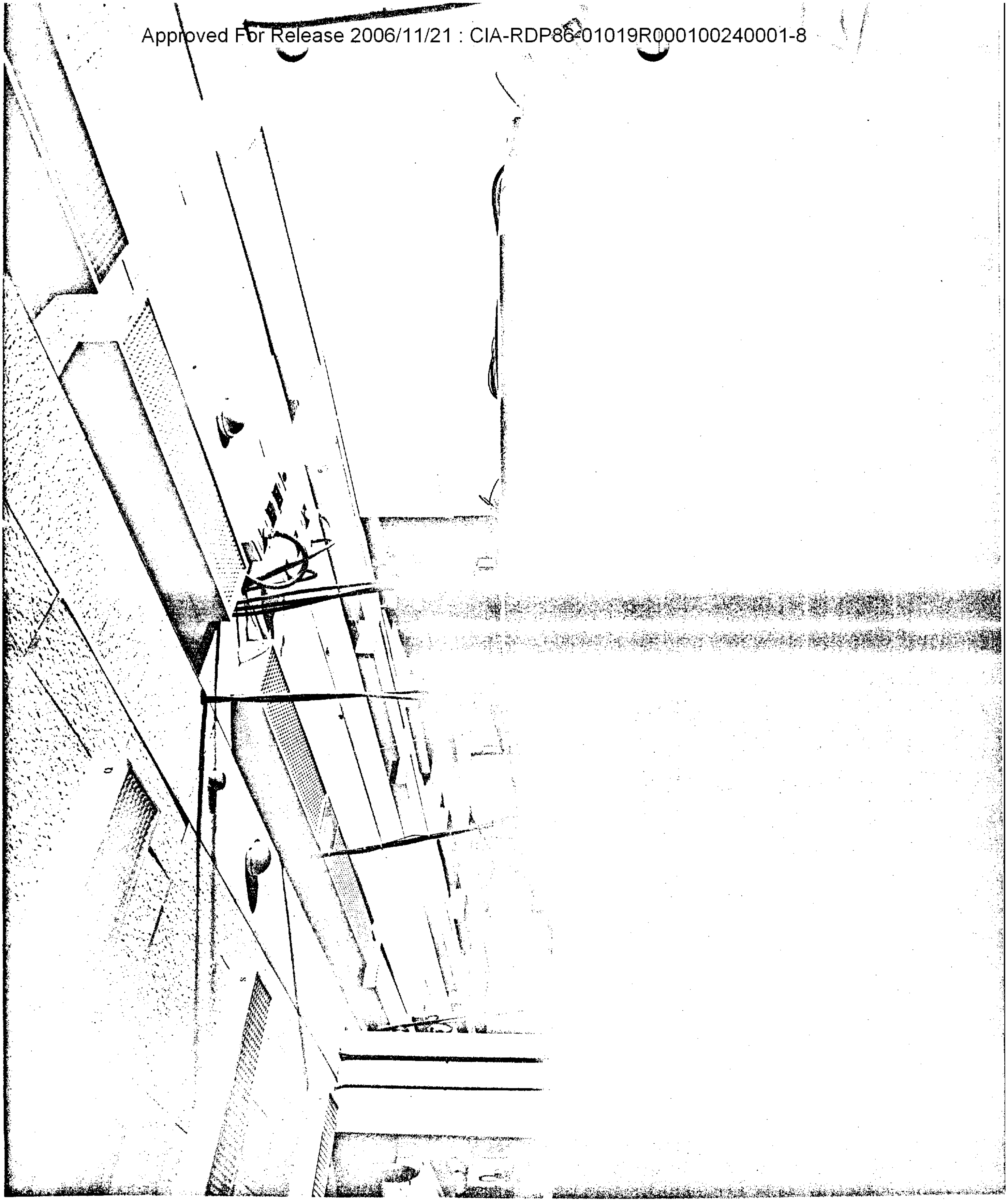

fig. 3 - view 1
Overhead Cable in AND/OEL, GE78.

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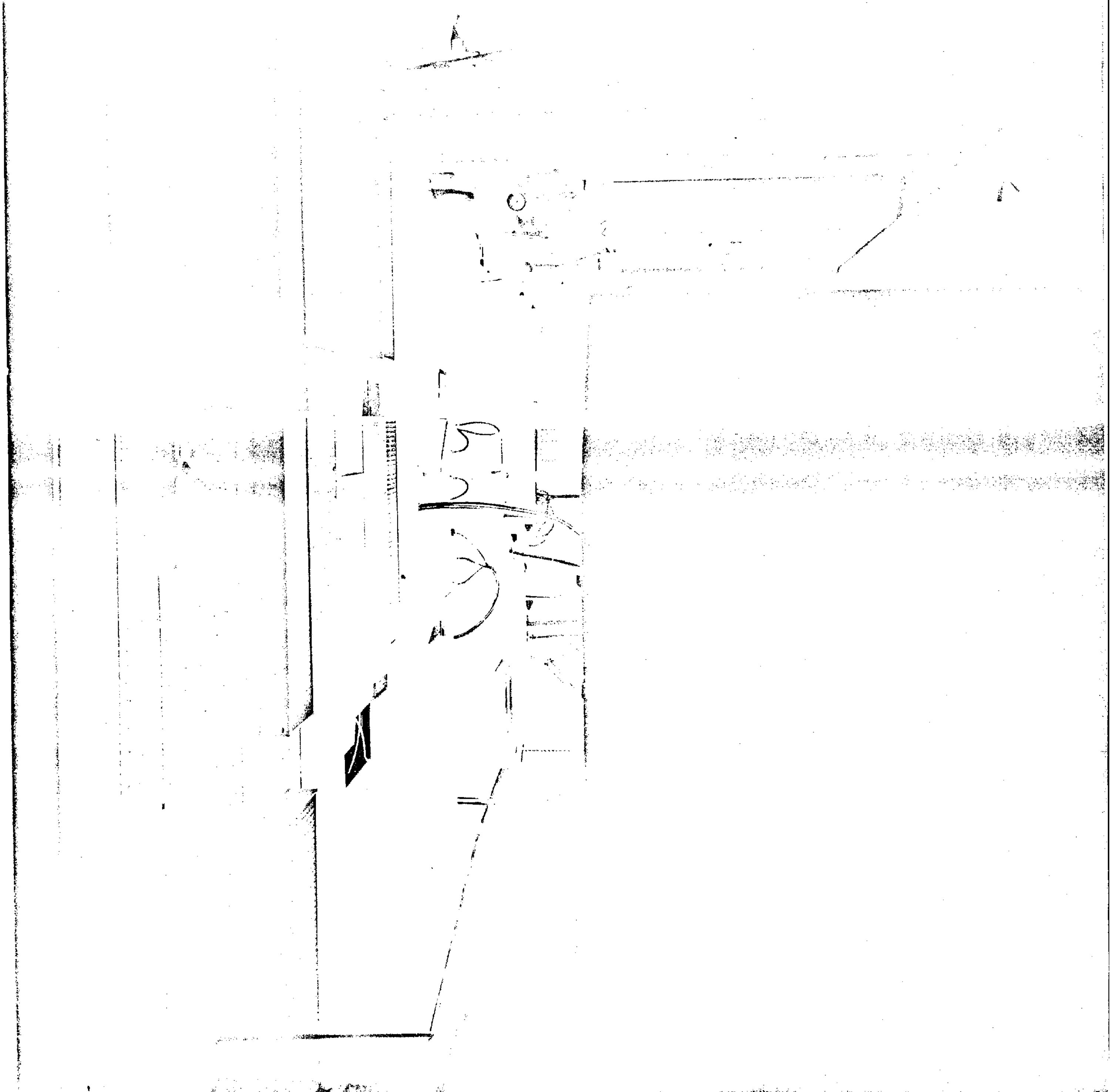

fig. 3 - View 2
Overhead Cable in AND/OEL, GE 78.

TOP

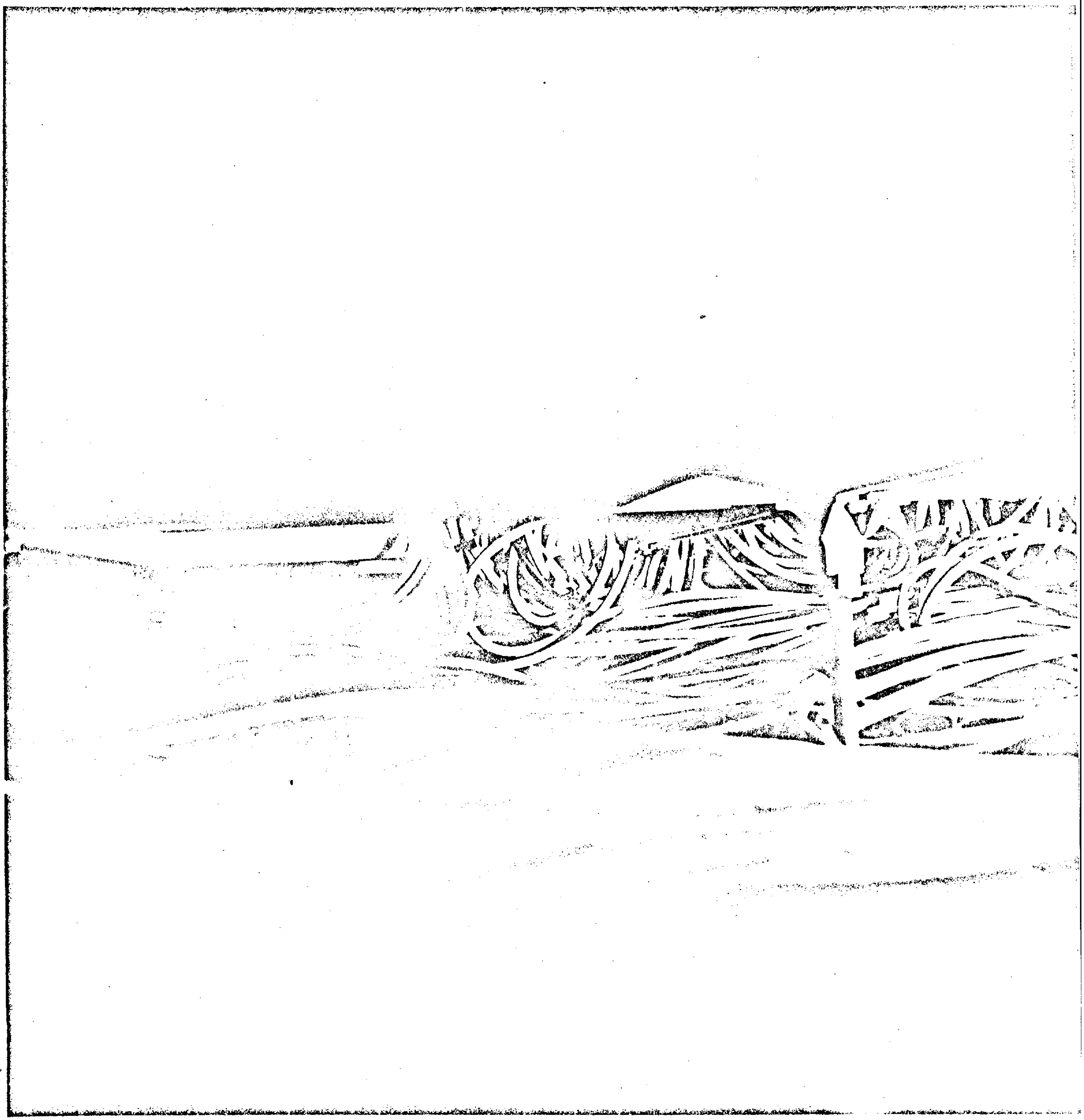

fig. 4.

View 1 - Underfloor Conditions OCS Area GC03

fig. 5.

View 2 - Underfloor Conditions OCS Area GC03

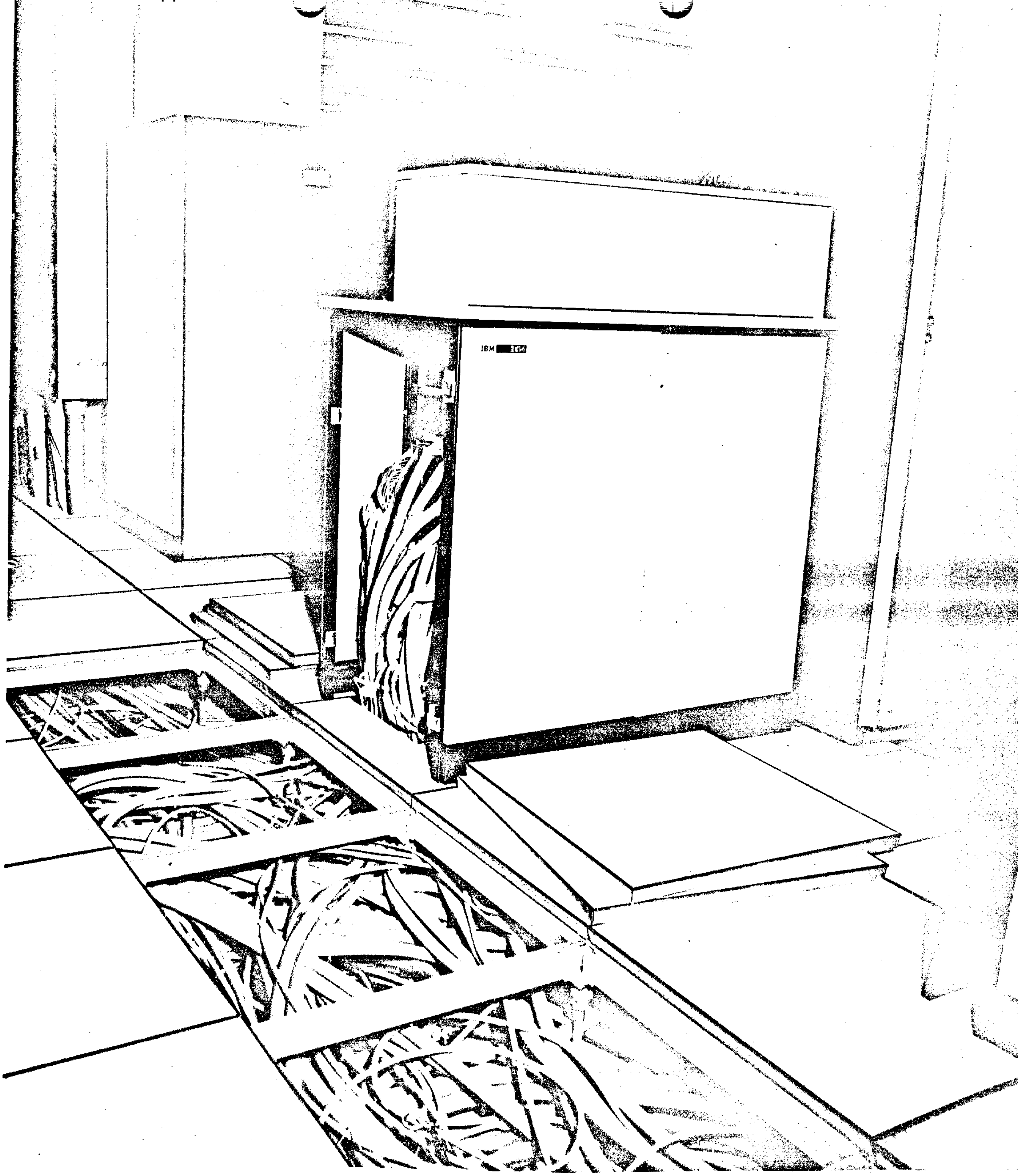

fig. 6.

View 3. - Underfloor Conditions OCS Area GC03

Approved For Release 2006/11/21 : CIA-RDP86-01019R000100240001-8

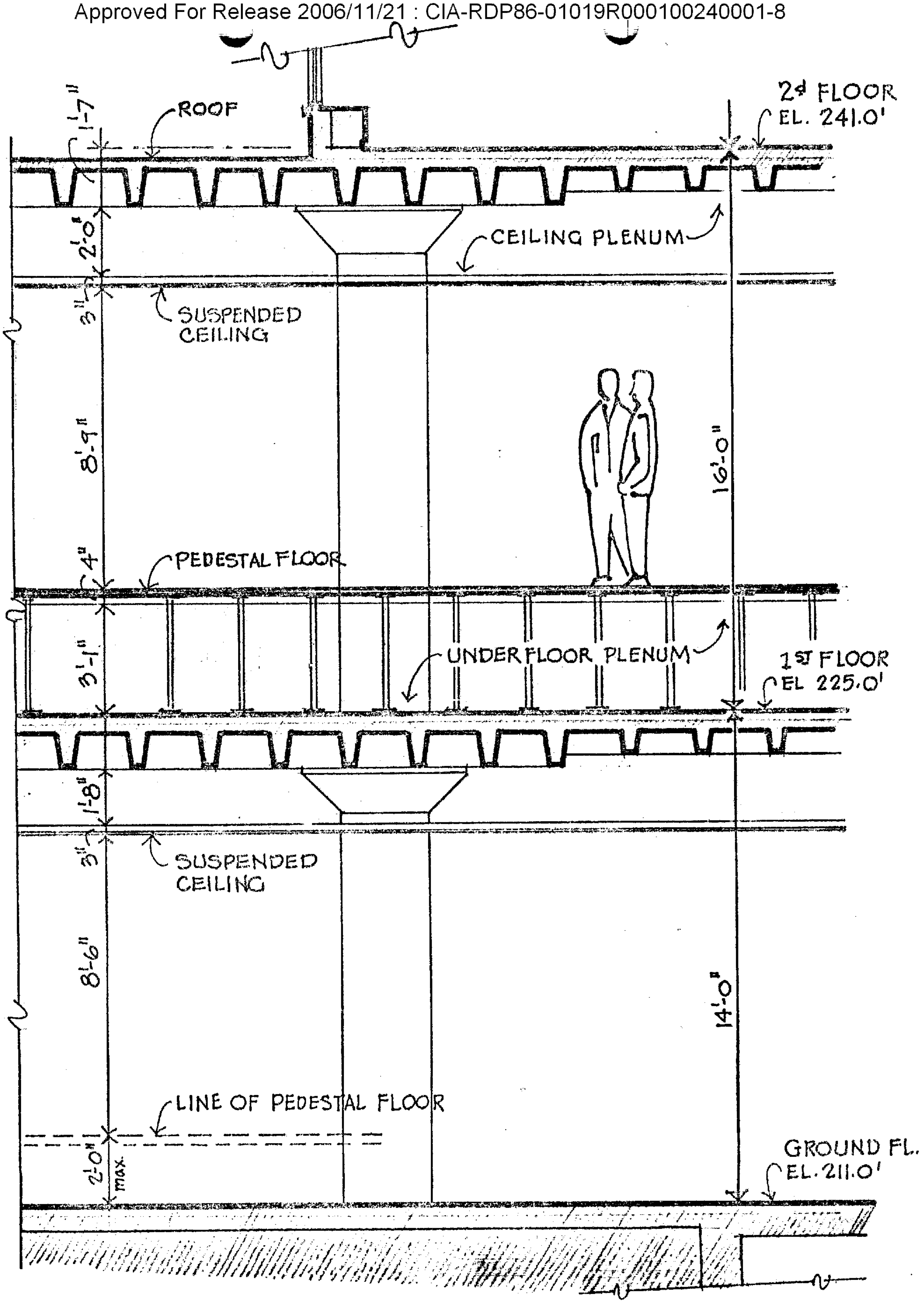

fig. 7.

Building Section Showing ESE Floor & Ceiling Plenums.

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